Fall 2019

TRAN 603-101: Introduction to Urban Transportation Planning

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NJIT New Jersey's Science & Technology University

TRAN 603 – Fall 2019

Introduction to Urban Transportation Planning

Section: 101

Instructor

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Class:

KUPF 203 (6:00 PM ~ 9:05 PM on Thursdays)

Office Hours:

3:00 PM ~ 6:00 PM on Thursdays

Urban travel patterns and trends; community and land activity related to transportation study techniques including survey methods, network analysis, assignment and distribution techniques. Case studies of statewide and urban areas are examined. Same as CE 603

Course Description

The course will introduce the concepts of urban travel analysis, community and land activity related to transportation systems, and socio-economic aspect of transportation planning. The knowledge of the analytical models, including the design and use of mathematical models for the estimation of transport demand in the framework of major strategic transportation planning will also be discussed.

Course Objectives

- Understand the principles and practices of urban transportation planning
- Understand the interactions between transportation planning and socio-economic, demographic, and land use characteristics
- Learn transportation planning processes and forecasting models
- Attain the capability to deal with transportation planning problems within the context of society, data availability and practical constraints

Course Content

The course consists of a number of lectures, and several exercises. The following subjects will be covered:

- The functions of models in the transportation system analysis.
- Types of models and their applications.
- Theoretical foundations (travel choice theory).
- Aggregated models for trip generation, distribution, model split and network assignment.
- Disaggregated choice models.
- Estimation of model parameters and calibration.

Final Attainment Level

After completing the course, the students are expected:

1. To have knowledge of the urban transportation planning process
2. To have knowledge of the structure of the modeling analysis process in transportation planning, of the related computational models, their theoretical foundations and their behavioral backgrounds.
3. To have insight into the operation of the quantitative analysis process in transportation planning, in the derivation, the operation and the application possibilities of the different types of transportation models, as well as in the estimation process of model parameters based on travel and traffic observations.
4. To attain skills in:
    - Building a system description of a transportation network
    - Setting up simple transportation planning models
    - Calculating and analyzing transportation demand
    - Interpreting model results.

Instructional Material

- **Textbook**: Michael D. Meyer and Eric J. Miller, Urban Transportation Planning, 2nd Edition, The McGraw-Hill Companies, 2000. ISBN-10: 0072423323.
- Class Notes, Handouts, PowerPoint presentations, and narrated lectures

Tentative Course Outline

Date	Topic	Textbook
Sep 5	Course Introduction Purpose and Goals of Transportation Planning Urban Transportation Planning Process Systems Approach to Transportation Planning	Ch. 1 ~ 3
Sep 12	Transportation Demand Transportation Cost Concepts of Demand Elasticity	Ch. 5
Sep 19	“Four-Step” Transportation Demand Modeling	Ch. 4 ~ 5
Sep 26	Trip Generation Regression Models and ITE Trip Generation Book Cross-Classification Models	Ch. 5 Class Notes
Oct 3	Trip Distribution Gravity Model Calibration of a Gravity Model	Ch. 5 Class Notes
Oct 10	Modal Split (Mode Choice) User Utility Theory Calibration of a Modal Split Model	Ch. 5 Class Notes
Oct 17	Midterm Exam	
Oct 24	Transportation Network Design Transportation Supply Analysis	Ch. 7. Class Notes
Oct 31	Traffic Assignment (I) Network Equilibrium: User Equilibrium and System Optimal	Ch. 5 Class Notes
Nov 7	Traffic Assignment (II)	Ch. 7 Class Notes
Nov 14	Contemporary Urban Transportation Planning Problems: Congestion Pricing, Goods Movement	Class Notes
Nov 21		
Nov 26	Transit Planning and Transit Oriented Development (Tuesday Follow Thursday Schedule)	Class Notes
Dec 5	Land Use Modeling	Ch. 6
Dec 12	Final Exam	Ch. 1 ~ 7
Dec 15	Final Exam Due	

Homework

There will be 6~8 homework assignments following the lectures, which shall be completed independently.

Exams

There will be a midterm and a final exam, which shall be completed independently.

Grading

Midterm Exam	30%
Final Exam	30%
Homework	30%
Class Participation	10%

General Policy

Assignments and exams are to be completed by the due dates. Late submission will not be acceptable.

Makeup Policy

There will be **NO** makeup for exams unless there are justifiable circumstances.

Code of Conduct

The NJIT honor code (http://www.njit.edu/academics/pdf/academic-integrity-code.pdf) will be upheld throughout the term for this course, and students are expected to abide by it. Any breach of code will result in failure of the course at the least and will be brought to the immediate attention of the Dean of Students leading to suspension or dismissal from the university.

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:
http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. **Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.** If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

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